Conclusion

Obvious modifications that do not depart from the essentials of the invention are apparent to those skilled in semiconductor fabrication or in printed circuitry or in the chemistry of thin films. In view of the changes in the invention that are obvious to such skilled persons, it is intended that the invention not be limited to the precise procedures here described not to the specific materials used in those procedures. Rather, it is intended that the scope of the invention be construed in accordance with the accompanying claims, having due consideration for changes that merely involve obvious equivalents and for the substitution of materials having known similar properties.

We claim:

1. A process for producing conductive paths on a substrate of the kind having polar functional groups at its surface, comprising the steps of;

(a) causing a self-assembling monomolecular film to be chemically adsorbed on the surface of the substrate,

(b) altering the reactivity in regions of the film to produce a predetermined pattern in the film,

(c) causing a catalytic precursor to adhere only to those regions of the film that have sufficient reactivity to bind the catalytic precursor, and

(d) placing the wafer in an electroless metal plating bath whereby a metal plate is produced in those regions having the catalytic precursor thereon.

2. The process according to claim **1** wherein the substrate is a semiconductor substance and wherein the self-assembling monomolecular film is a silane of the R_nSiX_m type where;

R is an organic functional group;

$1<n<3$;

$m=4-n$; and

X is a halogen or alkoxy.

3. The process according to claim **1**, wherein the substrate is a solid of semiconductive silicon and wherein the self-assembling monomolecular film is produced on the solid by adsorption from a solution containing a chlorosilane.

4. The process according to claim **3**, wherein the chlorosilane in solution is 7-octenyldimethylchlorosilane.

5. The process according to claim **3**, wherein the chlorosilane in solution is 5-hexenyldimethylchlorosilane.

6. The process according to claim **2**, wherein the catalytic precursor is a colloid containing palladium and tin.

7. The process according to claim **6**, wherein the palladium and tin in the colloid are in chemical compounds of those metals.

8. The process according to claim **1**, wherein the reactivity in regions of the film is altered by irradiating those regions with irradiation that promotes polymerization of the irradiated regions.

9. The process according to claim **8**, wherein the wafer is situated in a vacuum or an inert atmosphere during the irradiation procedure.

10. The process according to claim **9**, wherein the irradiation is UV light whose wavelength is less than 200 nm.

11. The process according to claim **10**, wherein the self-assembling film is a silane layer.

12. The process according to claim **1**, wherein the substrate is a solid of semiconductive silicon having hydroxyl groups on its surface and wherein the self-assembling monomolecular film is bound to the substrate by siloxane bridges to those hydroxyl groups.

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